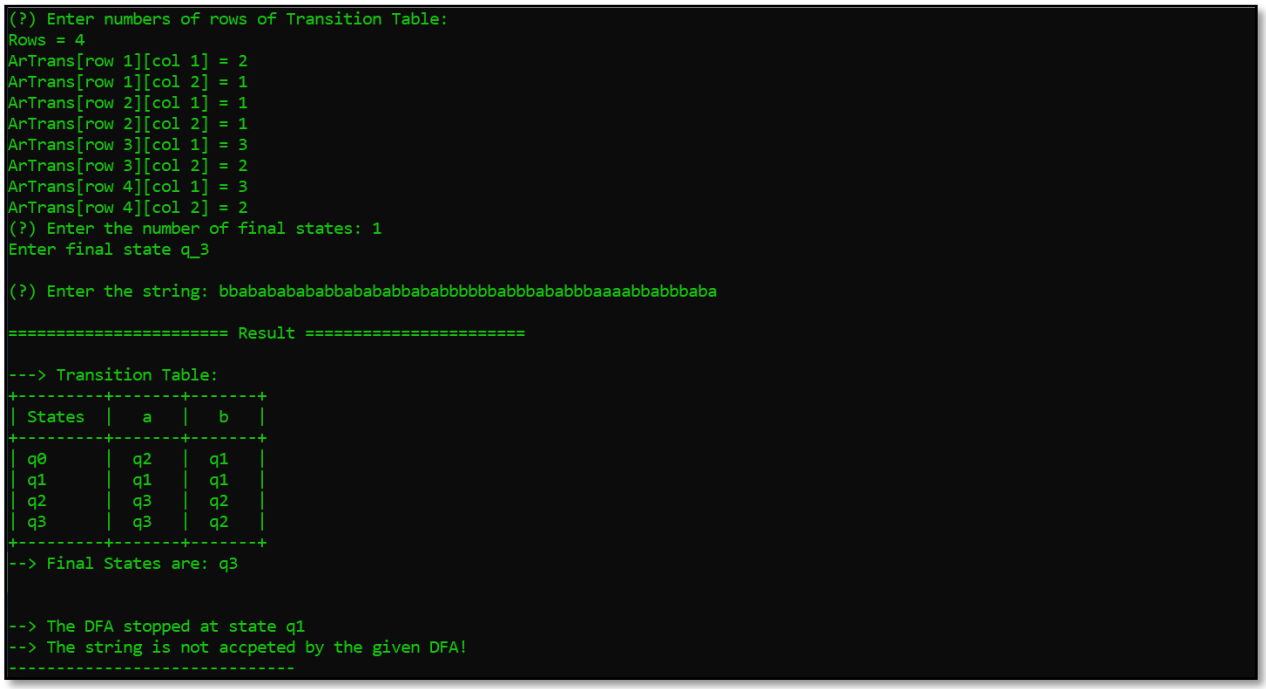
Full name: Vu Hoang Tuan Anh
ID: 18812

DOCUMENTATION FOR USING MY DFA CHECK TOOL



Simple version (Has only 2 columns of the transition table)

Input requirement:

- The number of rows of the exact DFA transition table
- Every transition state of the transition table
- The number of final states, and the index of them
- The string which you want to check with the given DFA

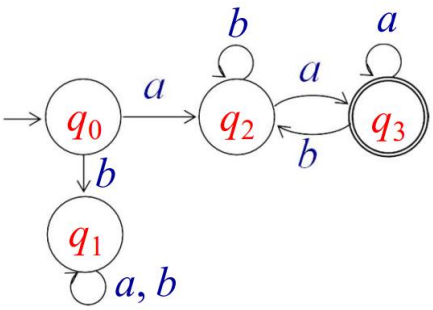
Output:

- The visualization of the DFA transition table
- All the final states
- Which states that the DFA stopped at when completing checking the string
- The validity of the string

Full name: Vu Hoang Tuan Anh
ID: 18812

Demo:

Given L(M) = {awa: w {a,b}*}, check the validity of the string bbababababbbaababbababbbbaa



Transition Table:

	a	b
q0	q2	q1
q1	q1	q1
q2	q3	q2
q3	q3	q2

Final state is q3

Implement this problem on the program:

1. First we input the number of rows of the transition is 4, then enter each element of the table to the program like this:

```
(?) Enter numbers of rows of Transition Table:
Rows = 4
ArTrans[row 1][col 1] = 2
ArTrans[row 1][col 2] = 1
ArTrans[row 2][col 1] = 1
ArTrans[row 2][col 2] = 1
ArTrans[row 3][col 1] = 3
ArTrans[row 3][col 2] = 2
ArTrans[row 4][col 1] = 3
ArTrans[row 4][col 2] = 2
```

Transition Table:

	a	b
q0	q2	q1
q1	q1	q1
q2	q3	q2
q3	q3	q2

ArTrans[1][1] = 2

ArTrans[2][2] = 1

2. Then we enter the number of final states and what are they:

```
(?) Enter the number of final states: 1
Enter final state q_3
```

Full name: Vu Hoang Tuan Anh
ID: 18812

3. After all, enter the string:

```
(?) Enter the string: bbababababbbaabababbabbbbaa
```

4. Enjoy the final result:

```
====================== Result ======================

---> Transition Table:
+---------+-------+-------+
| States  |   a   |   b   |
+---------+-------+-------+
| q0      |  q2   |  q1   |
| q1      |  q1   |  q1   |
| q2      |  q3   |  q2   |
| q3      |  q3   |  q2   |
+---------+-------+-------+
--> Final States are: q3


--> The DFA stopped at state q1
--> The string is not accpeted by the given DFA!
```

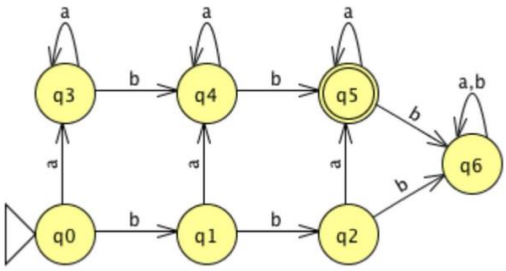
Input sample I used above (Just copy it and paste on the program, then press Enter to see the result):

```
4
2
1
1
1
3
2
3
2
1
3
bbababababbbaabababbabbbbaa
```

Full name: Vu Hoang Tuan Anh
ID: 18812

Bonus Sample 2:

Given L(M) = $\{a^n b^2 : n \geq 1\}$ (all strings with at least one a and exactly two b's). Check the validity of the string aaaaaaaaaaaabaaabaaaaaaaaaaaa



Input sample:

```
7
3
1
4
2
5
6
3
4
4
5
5
6
6
6
1
5
aaaaaaaaaaaabaaabaaaaaaaaaaaa
```

Full name: Vu Hoang Tuan Anh
ID: 18812

Extended version (able to input the number of columns of the transition table)

Input requirement:

- The number of rows of the exact DFA transition table
- The number of columns of the exact DFA transition table
- Every transition state of the transition table
- The number of final states, and the index of them
- The string which you want to check with the given DFA

Output:

- The visualization of the DFA transition table
- ~~All the final states (*are disabled*) (uncomment on the source code to enable this feature)~~
- Which states that the DFA stopped at when completing checking the string
- The validity of the string

Demo:

```
(?) Enter numbers of rows of Transition Table:
Rows = 3
Columns = 3
ArTrans[row 1][col 1] = 1
ArTrans[row 1][col 2] = 0
ArTrans[row 1][col 3] = 2
ArTrans[row 2][col 1] = 1
ArTrans[row 2][col 2] = 0
ArTrans[row 2][col 3] = 2
ArTrans[row 3][col 1] = 0
ArTrans[row 3][col 2] = 1
ArTrans[row 3][col 3] = 0
(?) Enter the number of final states: 2
Enter final state q#: 1
Enter final state q#: 2

(?) Enter the string: cacacacacbbcabcbbcbbbbcabcbabcababbababababaaaaccc

====================== Result ======================
--> The Transition Table:
      a     b     c
q0    q1    q0    q2
q1    q1    q0    q2
q2    q0    q1    q0

--> The DFA stop at state q2
--> The string is accpeted by the given DFA!
Press any key to continue . . .
```